

ORANGE NEWS

Total.168
Vol.003 2023 AUTUMN

Interview on Manufacturing

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CNC 2-Spindle 2-Turret Precision Lathe

WORK & SOUL

HAMADA Co., Ltd.

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Asahi Plant Starts Publishing Videos
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Participation in the "Toshiie and Matsu" Kanazawa Castle Relay Marathon 2023
Strolling Through TAKAMAZ

Traveling the Hokuriku Area to Experience Craftsmanship

Visiting the front town of the head shrine of Hakusan Shrine,
where chrysanthemum sake is brewed

[Cover photo]

Location: Ishikawa Prefectural Agriculture and Forestry Research Center, Forestry Experiment Station Exhibition Hall
An exhibition hall that stands in an arboretum known for beautiful cherry and camellia blossoms. This photo was taken in the building which was designed by Mitsuo Taki, who is known for architecture that coexists with nature.

Model / Misato Kimura

Also appears as the navigator in our Asahi Plant tour video.

TAKAMAZ

TAKAMATSU MACHINERY
PR Magazine Autumn 2023

Manager of Control Development Division
Technical Development Dept.
Ryo Nagata

Chief of Research and Development Division
Technical Development Dept.
Shota Shinmoto

Research and Development Division
Technical Development Dept.
Kotaro Aoki



Developers Talk

CNC 2-Spindle 2-Turret Precision Lathe Appeals of the XWT-8

We spoke with three developers who led the development of the new model XWT-8, which is to be put on display at the “Mechatronics Technology Japan 2023” (MECT 2023) exhibition held at Port Messe Nagoya from October 18 to 21. The XWT-8 has been upgraded to make it a machine tool that can be used not only in the automotive industry, where the aims are efficiency and accuracy, but also in other business fields. This development required a substantial increase in flexibility and workability to address the needs of multiproduct, variable quantity production.

In brief, what kind of model is XWT-8?

Chief of Research and Development Division
Technical Development Dept.
Shinmoto

The XWT-8 is the latest redesigned successor to the much-loved XW-130, addressing market needs such as “high productivity” and “compactness” required by the automobile industry. In accordance with the shift to electric vehicles,

the redesign for this model has focused on machining drive system parts such as for transmissions and differential gears, and steering-related parts. It also caters to a range of other fields including construction machinery, agricultural machinery, hydraulic and pneumatic equipment, and robots, and to increase its competitiveness in these markets, we added specifications that take the environment and SDGs into consideration.

We have also prepared functions and equipment to ensure we can improve working convenience by making full use of Digital Transformation (DX).

What was your intention in making the machine usable in other business fields?

Shinmoto

Production lines that are able to handle a variety of parts are required to respond to the diversification of customer needs in various business fields. Therefore, we focused on providing flexibility such as setup changes according to changes in

the type of product to be machined, and making it easy for customers to change the loader operation program themselves.

Please tell us the specific differences in control compared to existing models.

Manager of Control Development Division
Technical Development Dept.
Nagata

The operation panel is a 21.5-inch touch panel, which is large with excellent visibility. A multi-display format with three sections—upper, middle, and lower—displays the required information according to the work situation, enabling intuitive operation. The TAKAMAZ OS is provided as standard, and the home screen now allows various information about the machine, including the starting conditions, operation status, production completion schedule, and progress status, to be viewed on one screen. In addition, the DX technology makes it possible to automate and simplify operations.

The loader system is also new, isn't it?

Nagata

The introduction of the new loader system is also a feature of the XWT-8. The previous loader systems were configured using various parts including dedicated control boards, display units, and amplifiers. The XWT-8 integrates the loader system and the main unit system, which reduces the number of parts and improves maintainability.

Shinmoto

That was good, because reduction of the number of parts and centralization simplifies maintenance.

Nagata

Another point I would like to add is that the loader is equipped with a mechanism that enables it to use energy generated during motor deceleration as a power supply, which helps to reduce power consumption.

Are there other features that you would like to tell us about from the developers' point of view?

Shinmoto

The XWT-8 focuses on environmental friendliness and uses our original

thermal displacement compensation system, called “Thermony®”, as standard. In addition to reducing machining defects due to thermal displacement, it also deals with heat generation inside the machine which affects machining accuracy by adopting a mechanism whereby temperature rise is suppressed by an air cooling structure, rather than forced cooling by cooling fluid. This eliminates the need for the pump power and cooling fluid of a liquid-cooled structure, resulting in lower running costs and improved maintainability.

Another point is that in order to develop the most suitable automation system for the machine, we developed the loader simultaneously with the lathe and have given it a structure that differs from conventional loaders. Loaders are proposed solutions to the issue of how to mount and dismount workpieces at a machine tool quickly without vibration. In order to achieve even higher speed and vibration control, the XWT-8 has been provided with optional specifications that reduce weight by using new materials in place of steel, and making structural changes. We are considering rolling out this technology to other products in

addition to the XWT-8.

Research and Development Division
Technical Development Dept.
Aoki

With regard to the slide structural parts that I was responsible for, we used hybrid slides combining roller and linear guides to give high sliding rigidity and positioning accuracy for turning work. Along with the changes to the slide structure, we expanded the slide span that bears the machining load to ensure rigidity equal to or greater than that of conventional machines. We have also managed to reduce the amount of lubricant used.

A little over a year has passed since the development plan was announced. Through repeated trial and error while taking the market needs and the wishes of each division into account, a machine that has new features while maintaining the essence of TAKAMAZ was born. Please visit the TAKAMAZ booth at MECT 2023.

More
efficient work
checking!



Future-oriented 2-Spindle, 2-Turret Precision Lathe with Broad Market Applicability

CNC 2 Spindle 2 Turret CNC Precision Lathe

XWT-8



● Large-sized Touch Panel for Improved Operability

A 21.5-inch touch panel providing excellent visibility is adopted for better operating convenience during setup.

● Shorter Loading Times

The shortest loading time is 10% faster than on existing models, at 5.5 seconds. This increases productivity from workpiece supply to unloading.

● New 3-axis loader system adopted

All the functions that facilitate loader setup are applied to the 3-axis loader system, improving working convenience and productivity.

● Reductions in Machining Defects and Energy Consumption

TAKAMAZ's proprietary “Thermony®” thermal displacement correction system can predict the effects of changes in temperature on finish dimensions under various conditions of use and environmental conditions and apply corrections to curtail machining defects.

Chuck size	Collet, 8 inch
Spindle bearing I.D.	φ100 mm
Spindle speed	Max. 4,000 min ⁻¹
Type	8-station turret
Max. stroke	X:150 Z:180 mm
Rapid traverse rate	X:24 Z:24 m/min
Spindle motor	AC 11/7.5 kW
L×W×H	1,890 (Overall width: 2,250) × 2,187 × 2,400 (Overall height: 2,935) mm
Controller Specifications	FANUC Oi-TF Plus

INDEPENDENCE

— Self-reliance —

Playing an active role in the automotive and medical fields
by making full use of spherical machining technology.
Behind this was the development of people who take on challenges.



Mirror finish parts

HMD clip applicators

Making People, To Produce High Quality Products

As a professional group that supports manufacturing in Hiroshima,
their business has developed focusing on the machining of automotive parts ever since foundation.
Such technology has led to the development of their proprietary brand for medical devices.

HAMADA CORPORATION



[Right] Executive Director / Yutaka Oishi
[Middle] General Manager of Manufacturing Dept.
and Production Control Dept./ Tomoya Handa
[Left] Chief of Production Engineering Division / Junichi Hironaka



[Hamada Co., Ltd.]
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TEL. +81-(0)82-281-6341
FAX. +81-(0)82-285-0531
President : Tadahiko Hamada
Capital : 30 million yen
Employees : 300
Establishment : April 1953
Nature of Business :
Precision machining of metal, mainly for automobile parts, and manufacture and development of medical equipment



Hamada Aim to develop Hamada's original technology as a professional group supporting manufacturing in Hiroshima.
Enjoy Be strict with yourself, be kind to others, and enjoy your work!
Active Actively engage in everything with delicate sensitivity and bold energy.
Refine Refine the sophisticated and precise metal cutting technology built up through the manufacture of automotive parts.
Try Carry on the technological capabilities that Hamada is proud of and accept the challenge of reaching further heights without fear of failure.
1.(One) As people grow, so does the company. Each with our dream, we share one feeling in our quest to become #1.

considered as parts that require fine polishing.

In recent years, you have broadened your activities to cover the medical field too.

[Oishi] We started working on this twelve years ago. It came about when the company president took on the challenge in the belief that the technology of spherical machining could be utilized for artificial hip joints. A big difference in comparison with automotive parts was the **mirror finish**. A mirror-like surface must be achieved, and that is difficult.

Hamada is a Hiroshima-based company engaged in the machining of parts for vehicle drive and electrical systems, engines and transmissions. The spherical machining reflected in the motif of the logo can be said to be the most emblematic technology of the company. That technology has evolved to handle mirror finish machining, and now even covers work in the medical field. Through this interview, we got a closer look at the work and mindset of an executive director and personnel with duties at the production site.

Firstly, please tell us about your business.
[Executive Director Oishi] Our business uses NC lathes and machining centers to machine automotive parts such as for drive and electrical systems, engines, and transmissions. We specialize particularly in spherical machining, which is even indicated in the company logo. To give an example of our automotive parts, we deliver parts for the focal point of gear levers for manual transmission vehicles. They are still used on cars such as roadsters, but there are many customers who place importance on how the lever feels, so these can be

In the medical field, we started out by supplying parts, but now we manufacture and sell our own products, namely clip applicators. They are medical devices, developed in-house together with medical doctors, and have movement and grasping functions at the tip that can be controlled without restriction using one hand. This reduces the time required for laparoscopic surgery. We are also applying our specialty metal cutting technology in the medical field, to manufacture medical components such as artificial joints and small steel parts. Implants that remain in the body are difficult to machine because they are made of a biocompatible cobalt-chromium alloy. So we are machining a material with a high hardness and also feels sticky. As a result of our expansion into the medical field, we have acquired electric discharge machines, laser markers, 3D printers, and other equipment, and we are now making use of know-how about this equipment in our machining of automotive parts.

You have expanded into a field that is very different field from automotive parts. What kind of motivation did you all have for that?

[Oishi] The employees seemed highly motivated because the spirit of taking on challenges is naturally instilled as part of our company's constitution. Even before expanding into the medical field, we took on a succession of other fields including railway parts and sports equipment.

Would you say that your constitution as an organization that takes on challenges stems from your management philosophy of Making People, To Produce High Quality Products?

[General Manager of Manufacturing Dept. and Production Control Dept. Handa] I think nurturing people is undoubtedly important in manufacturing. I am now managing 214 people in the manufacturing department, and I start by meeting people one-on-one and listening to their views on where there emphasis is on work. The average age of the workforce is around 38, but when starting up something new or making improvements, we create a small team where everyone can act with a sense of being in the loop, rather than a top-down team. I feel that our company is characterized by the fact that we actively delegate work to people who raise their hands, and that the president is fully behind those people. The HEART-1 project is an improvement initiative that takes advantage of this characteristic. We have made a poster for the project and everyone is involved in it.

This self-motivated attitude is something that we can sense in the creation of your own specialized machine tools and design of production lines, don't you think?

[Oishi] That's right. With factory equipment too, we purchase machines without accessories, make the jigs in-house, and handle everything through to setup. We also purchase robots without accessories, make the hands and teach them, and finally build everything in-house to enable automatic transfer, which is also something I believe to be characteristic of us.

With that in mind, how do you evaluate TAKAMAZ's machines, people, and services?

[Chief of Production Engineering Division Hironaka] Since your sales personnel have experience in service work, they quickly understand our thoughts and are very easy to work with. This also applies to meetings

about the specifications of machines. Added to that, the machines are also simple and not susceptible to breakdowns, so they are highly rated by those on the factory floor.

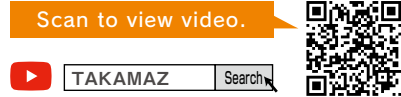
[Oishi] I also heard people on the factory floor say that TAKAMAZ machines are good because they don't break down easily. Even if one does break down, it can be fixed in-house thanks to the simple structure. The fact that the machines are made by taking the users' perspective is an aspect I think highly of.

As the shift toward electric vehicles continues, electric parts are expected to become a fiercely contested sector. The corporate culture fostered by Hamada makes it easy to imagine the company boldly taking on challenges in its product lineup. This interview, with smiles that told me so cheerfully "I enjoy my work", has left a strong impression on me.

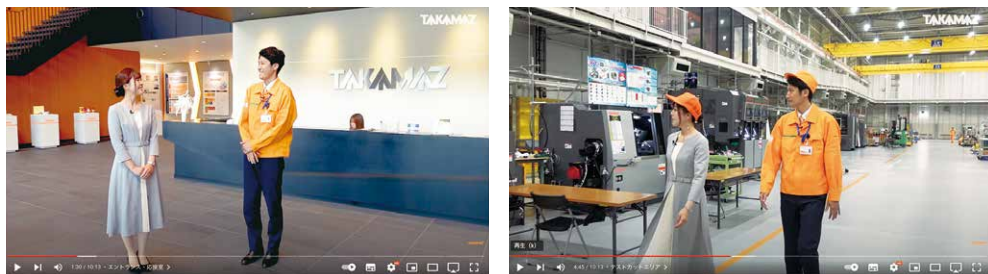


TOPIC1

Asahi Plant tour video released on YouTube!



We published a YouTube video that introduces all the highlights of the [Asahi Plant] in April 2022. Ms. Misato Kimura, the model who appears on the cover of this issue, introduces our workplace that is conscious about environmental friendliness and working convenience while actually walking around the plant. Please check it out!



information

TOPIC2

Exhibited at EMO Hannover 2023 (Germany)

EMO Hannover will be the first EMO show in four years after the 2021 event in Milan. In a normal year this would be a season where you need a light coat, but there was a fierce lingering heat here in Germany too, coupled with somewhat depressed economic sentiment, which meant that the event was scaled down a little. However, maybe partly because we had just come out of the Covid-19 pandemic, it seemed to be getting back to the old level of activity, with over 110,000 visitors. Our lineup showcased a total of five models, including the popular European hybrid machine "XYT-51" and the show proved a good opportunity to team up with local dealers and expand sales in Europe.



TOPIC3

The Whole Team Attempts 42.195 km!

On October 1st, in good weather, eighty TAKAMAZ volunteers gathered at Kanazawa Castle and participated in the "Toshiie and Matsu" Kanazawa Castle Relay Marathon 2023 [Fall Camp]. They wore newly-prepared team T-shirts in five colors for this very friendly event! Everyone—those with muscle pains from hurried training and those who were fully satisfied with their daily results—competed to the best of their ability with their own thoughts and feelings.



Strolling Through TAKAMAZ / Osaka Office Rui Takahashi

After working at the head office and Nagoya branch, Mr. Takahashi, who has been with TAKAMAZ for five years, took on machine repair and maintenance work at the Osaka branch in April this year. During his three years at high school, he devoted himself to baseball, and he now runs even to Tottori and Shikoku every day for his customers.

His Favorite Places & Tools

- I keep a number of pens in my breast pocket all the time, memorize assembly drawings, and deal with machines at customers' sites. Smartphones are also a must-have tool to access advice from experienced employees.
- The third month after I came to the Osaka branch. Sometimes, I drive to Shikoku and back. I am making the most of the new location, enjoying the view of the Naruto whirlpools through the car window, for example.
- The company car that travels over a wide area is like a dedicated pushcart. Items like my familiar tools and helmet are loaded in the trunk as if they own the place.

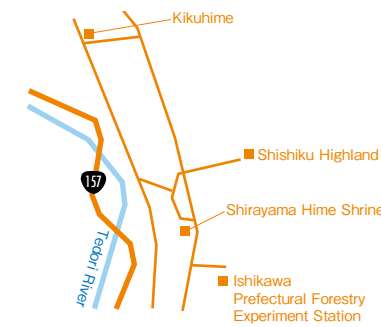


Traveling the Hokuriku Area to Experience Craftsmanship

— CRAFT CONSCIOUS —

Visiting the front town of the head shrine of Hakusan Shrine, where chrysanthemum sake is brewed

At the foot of Mount Hakusan lies the town of Tsurugi, which retains an air of prosperity as a former lodging town on the Tsurugi Kaido road. In addition to the long-established chrysanthemum sake brewery, the town is dotted with miso and soy sauce brewers, and has a deep-rooted culture around fermented produce. Walking along the tranquil approach to the shrine, you can look out over the Tedorii river delta and enjoy the rich fragrance of Japanese sake. How about a trip to Tsurugi?



Shirayama Hime Shrine

Mt. Hakusan has been worshiped as a sacred mountain since ancient times. Shirayama Hime Shrine is the head shrine of the Hakusan Shrine, which takes the sacred mountain Hakusan as its object of worship. Omoteya, a shop located by the entrance to the front approach, is very popular for its *oban-yaki* (large oval pancakes filled with bean jam).



Shishiku Highland

This is a plateau with an altitude of 650 m. At the peak of the mountain, reached by ropeway, you can get a panoramic view of the delta of the Tedorii River and a splendid view of the Sea of Japan. The sight of people flying in the sky with paragliders is also impressive.

Stands of wild chrysanthemums can be found in the upper reaches of the Tedorii River, which flows through the Kaga region of Ishikawa Prefecture, and the water of the Tedorii River that receives the water droplets that fall from the flowers is respected as *kikusui* (chrysanthemum water), while the sake brewed with that water is called *kikuzake* (chrysanthemum sake). It is said that Hideyoshi Toyotomi made the first mention of Kaga chrysanthemum sake when he held the Daigoji Temple Cherry Blossom Viewing. Kikuhime is one of the breweries that has inherited the chrysanthemum sake tradition.

Passing through the noren curtain of an elegant wooden building and looking for high-grade sake is a treat of a visit to Tsurugi. About 1.2 km away from Kikuhime, we find Shirayama Hime Shrine, the head shrine of the Hakusan Shrine which has about 3,000 affiliated shrines throughout Japan. Walking along the tranquil front approach, you will be welcomed by a line of shrine buildings nestled among old trees. You can reach the Shishiku Highland by going through the north gate of the shrine and climbing a hill. If you take a cable car to the top of the mountain and look down, you can see a superb view of the delta of the Tedorii River.



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